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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/587,362
Filing Date: September 28, 2006
Appellant(s): ENDRES ET AL.

Heribert Muensterer
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/08/2009 appealing from the Office action mailed 7/08/ 2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6287639	Schmidt	9-2001
6378599	Schmidt	4-2002
6513592	Espin	2-2003

Sigma-Aldrich MSDS

datasheet

(triethoxyphenylsilane and

tetraethoxysilane)

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 11-27 are rejected 35 U.S.C. 102(b) as being anticipated by US Patent 6287639 B1 (Schmidt 639), as evidenced in the MSDS data sheet of Sigma-Aldrich.

Schmidt 639 teaches a composition comprising one or more silanes of the general formula of (I) R_xSiA_{4-x} (col. 1, line 9-18) for molded articles (Examples 3, 6, 7, 12) and consolidating (col. 5, line 33) substrate comprising at least one of porous materials such as sand and clay (col. 2, line 11-13), wherein the radicals R independently represent non-hydrolysable groups (col. 1, line 13-15) including one or more radicals selected from C_{1-4} alkyl groups such as methyl and ethyl (col. 2, line 59) and aryl groups (col. 2, line 62) such as phenyl (col. 2, line 63); the radicals A independently represent hydrolysable groups or hydroxyl groups (col. 1, line 12-14) including one or more radicals selected from halogen (col. 2, line 35), alkoxy in

particular C₂₋₄ alkoxy groups (col. 2, line 36) and acyloxy (col. 2, line 39) groups, x is 0,1,2 or 3, and $x \geq 1$ in at least 50 mol % of the silane. Schmidt 639 further exemplifies the silanes as phenyltriethoxysilane and tetraethoxysilane (col.5, line 50-55), both are liquid as evidenced in MSDS data sheet of Sigma-Aldrich, and methyltriethoxysilane (col.3, line 29-30, and Example 1).

Schmidt 639 further specifically discloses that the silanes may be employed wholly or partially in the form of precondensates either alone or in a mixture with other hydrolysable compounds (col. 3, line 56-60), wherein the hydrolysis and condensation (col.3, line 66-68) may be prepared in the presence of additives (col. 2, line 23-24, and claim 6) such as metal alkoxides (col. 4, line 19-20 and claim 7, "curing catalyst"), selected from aluminum alkoxides, titanium alkoxides or zirconium alkoxides (col. 4, line 21-22), or sodium methoxide or potassium acetate (col. 4, line 26). Schmidt 639 further discloses the hydrolysis and condensation is carried out under a sol-gel process (col. 2, line 24-25 and col.4, line 29-30) using a substoichiometric amount of water relative to hydrolysable radicals (claim1(1) and col.3,line 66-67,col.4, line1-5) to produce a solution comprising the silanes (col. 1, line 21 and col. 4, line 32 "a viscous sol").

Schmidt 639 further teaches a process for preparing a consolidated molded article (col. 5, line 37, and Examples 3, 6, 7, 12) comprises mixing an inorganic compound (col. 4, line 65, col. 2, line 11-13, "sands and clays" and Example 12) with the silane (col. 4, line 65-66) and thereafter curing the silane composition (Examples 1-4). Schmidt further discloses that prior to being combined with the material the silane is activated by adding water (col. 4, line 61-62).

Claims 11, 17 and 18 are rejected 35 U.S.C. 102(b) as being anticipated by US Patent 6378599 B1(Schmidt 599), as evidenced in the MSDS data sheet of Sigma-Aldrich.

Schmidt 599 teaches a composition (col.1, line 4) for molded articles (col. 3, line 56) and consolidating sands (Examples 1,2) comprises one or more silanes of formula(I) R_xSiA_{4-x} (col. 1, line 8-10), wherein the radicals R independently represent non-hydrolysable groups (col.1, line 13-15), the radicals A independently represent hydrolysable groups or hydroxyl groups (col.1 , line 11-13) , x is 0,1,2 or 3, and $x \geq 1$ in at least 50 mol % of the silane. Schmidt599 further teaches the silanes may be employed wholly or partially in the form of precondensates either alone or in a mixture with other hydrolysable compounds (col.2, line 56-60), and exemplifies the silanes as phenyltriethoxysilane and tetraethoxysilane (col.4, line 25-30), both are liquid as evidenced in MSDS data sheet of Sigma-Aldrich, and methyltriethoxysilane (Example 1).

Claims 28, 29, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6513592 B2 (Espin) in view of Schmidt 639 as evidenced in the MSDS data sheet of Sigma-Aldrich.

Espin teaches a process for consolidating sand formations (Espin, claim1) comprises injecting a consolidation system into the formation (Espin, col.2, line 47-48, and claim 1) and curing thereof (Espin , col. 3, line 30). Espin further teaches the consolidation system is a fluid suspension of nanoparticles as disclosed in

PCT/EP97/06370 (Espin, col. 3, line 18-19), of which Schmidt 639 is the English equivalent, which teaches the agent as claimed in claim 11 as detailed above.

At the time of the invention it would have been obvious for a person of ordinary skill in the art to inject the agent of Schmidt 639 into the formation and curing thereof for the benefit of consolidating sand formations, because Espin expressly teaches the use of the composition of PCT/EP97/06370 (Espin, col. 3, line 18-19), of which Schmidt 639 is the English equivalent. While teaching a particle modified by silanes, the silanes of Schmidt 639 itself is particle-free (as detailed above) and function as a surface modifying and bonding agent (Espin, col.3, line 13-16 and Schmidt, col. 1, line 5-15).

Espin further teaches the formation is a sand formation bearing hydrocarbon (Espin, col. 2, line 22-23), and the process for consolidating a sand formation comprise introducing nanoparticles comprising an inorganic component and silanes (Espin, col.3, line 8, 16) into channels (Espin, col. 3, line 39-42, "between grains" and "capillary forces", and Figure 2).

(10) Response to Argument

With respect to the rejection of claims 11-27 under 35 USC 102(b) as being anticipated by Schmidt 639, Appellant states that Schmidt 639 (Schmidt I in the appeal brief) fails to disclose a particle-free consolidation agent. In response, the Examiner maintains that Schmidt 639 discloses the same silanes as the instantly claimed which are particle-free (col.1, line 8-15 and col.3, line 55-60). Although Schmidt 639 does not expressly specify the silane as the consolidating agent, Schmidt 639 expressly teaches

that it is the silanes which is the surface modification agent for inorganic particles in particular SiO₂ (col.1, line 5-20 and col.4, line 6-10), which reads on the consolidating agent of the instant claims. The examiner also notes that the Appellant agrees that it is correct that the silanes used by Schmidt 639 are particle-free (Appeal brief, page 14, line 8-10).

Appellant further states that Schmidt 639 fails to disclose the combinations of silanes recited in claims 17 and 18. In response, the Examiner maintains that Schmidt 639 discloses the silanes as precondensates of methyltriethoxysilane, phenyltriethoxysilane and tetraethoxysilane, or mixtures of methyltriethoxysilane and tetraethoxysilane (col.3, line 15-20, 29-30 and 55-65; col.5, line 50-55 and Example 1), which reads on the limitation "at least one of a hydrolysate and a precondensate.." of claims 17 and 18.

With respect to the rejection of claims 11, 17 and 18 under 35 USC 102(b) as being anticipated by Schmidt 599, Appellant states that Appellant states that Schmidt 599 (Schmidt II in the appeal brief) fails to anticipate a particle-free consolidation agent. In response, the Examiner maintains that Schmidt 599 discloses the same silanes as the instantly claimed which are particle-free (col.1, line 6-16 and col.2, line 56-60). Although Schmidt 599 does not expressly specify the silane as the consolidating agent, Schmidt 599 expressly teaches that it is the silanes which is the surface modification agent for inorganic particles in particular SiO₂ (col.1, line 6-16 and col.3, line 6-10), which reads on the consolidating agent of the instant claims.

With respect of the rejection of claims 28-30 under 35 USC 103(a) as being unpatentable over US Patent No. 6513592 B2 (Espin) in view of Schmidt 639 as evidenced in the MSDS data sheet of Sigma-Aldrich, Appellant states that Espin fails to render it obvious to one of ordinary skill in the art to employ the instantly claimed particle-free consolidation agent but teaches away therefrom. In response, the Examiner maintains that Espin in view of Schmidt 639 teaches the same process by utilizing the same silanes as the instantly claimed which are particle-free silanes (Espin, col.3, line 12-18 and Schmidt, col.1, line 8-15 and col.3, line 55-60). Although Espin and Schmidt 639 does not expressly specify the silane as the consolidating agent, Espin and Schmidt 639 expressly teaches it is the organic component including silanes, hydroxyls and/or alkoxides (col.3, line 15-17) that allows polymerization of bonding to the unconsolidated formation (Espin, col.3, line 5-20) or functions as surface modification agent for inorganic particles in particular SiO₂ (Schmidt 639, col.1, line 5-20 and col.4, line 6-10).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Aiqun Li/

Art Unit: 1796

Conferees:

/MILTON I. CANO/

Supervisory Patent Examiner, Art Unit 1796

/James J. Seidleck/

Supervisory Patent Examiner, Art Unit 1796